

WE CLAIM:

1. A device comprising:
an emitter electrode;
a resistor layer;
5 a patterned electrically conductive seed
layer overlying part of the resistor layer;
a dielectric layer overlying the resistive
layer;
a gate electrode overlying the dielectric
10 layer above the resistive layer and having
lateral edges in approximate vertical alignment
with lateral edges of the dielectric layer; and
a carbon based electron-emissive element
(a) positioned over the seed layer above the
15 emitter electrode and (b) situated in a
composite opening extending through the gate
electrode and the dielectric layer.

2. A device comprising:
a group of laterally separated emitter
electrodes;
an electrically resistive layer overlying
parts of the emitter electrodes;
25 a dielectric layer overlying the resistive
layer;
a plurality of laterally separated gate
electrodes overlying the dielectric layer above
the resistive layer; and
30 a multiplicity of electron-emissive
elements (a) positioned over a patterned seed
layer above the emitter electrodes and (b)
situated in composite openings extending
through the gate electrodes and the dielectric
35 layer.

3. A device as in Claim 2 wherein the dielectric layer comprises a dual layer of silicon nitride and silicon dioxide.

5 4. A device as in Claim 3 wherein the dielectric layer comprises a single layer of silicon nitride.

10 5. A device as in Claim 3, wherein the dielectric layer comprises a single layer of silicon dioxide.

15 6. A device as in Claim 2 wherein the multiplicity of electron-emissive-elements comprise carbon.

20 7. A device as in Claim 6 wherein the multiplicity of electron-emissive-elements are filaments.

25 8. A device as in Claim 7 wherein the patterned layer comprises a plurality of laterally separated seed strips, each extending laterally over the resistor layer.

30 9. A device as in Claim 8 wherein a different one of said plurality of laterally separated seed strips underlies a group of said electron-emissive elements.

35 10. A device as in Claim 9 wherein said group of electron-emissive elements defines a pixel.

40 11. A device as in Claim 10 wherein the electron-emissive elements are allocated into a

number of laterally separated sets, each comprising multiple electron-emissive elements, at least one of the set overlying each conductive strip.

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12. A carbon based emitter fabrication method comprising:

furnishing and initial structure in which
10 (a) an emitter electrode overlies a glass substrate, (b) a gate electrode overlies a dielectric layer that overlies a resistor layer and (c) a group of electron-emissive elements
15 is disposed on a seed layer in a composite opening extending through the gate electrode and the dielectric layer; and

patterning the seed layer to form a plurality strips, each one of said plurality of
20 strips underlying a set of the electron-emissive elements.

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